Chapter 10

Maintain and Replace the Power Supplies

This chapter discusses the following topics related to maintaining and replacing the routing node power supplies:

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Maintain the Power Supplies on page 147

Replace a Power Supply on page 149

Tools and Parts Required

To maintain and replace the power supplies, you need the following tools and parts:

Phillips (+) screwdrivers, numbers 1 and 2

7/16-in. nut driver or pliers

Wire cutters

ESD grounding wrist strap

Maintain the Power Supplies

To maintain the power supplies, follow these guidelines:

To check the status of the power supplies, use the CLI command:

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user@host> show chassis environment pem
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Make sure that the power and grounding cables are arranged so that they do not obstruct access to other routing node components.

Routinely check the LEDs on the power supply faceplate. The CB ON LED indicates that the power supply is functioning normally, and the CB TRIP LED indicates a power supply failure. For more information about the power supply LEDs, see “Power Supplies” on page 28.

Routinely check the red alarm LED on the craft interface. A red alarm condition can be caused by a power supply failure. Immediately check the source of an alarm condition by using the LCD menu system, which is described in “Craft Interface” on page 22.

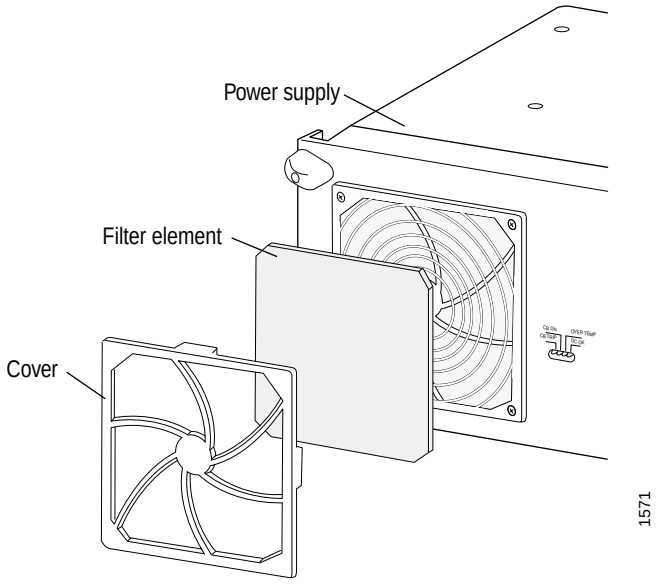
The power supplies require an unobstructed air flow at both the front and rear of the chassis. Periodically check the site to ensure that both the air intake at the bottom front of the chassis and the exhaust from the power supply faceplates are unobstructed.

Periodically inspect the site to ensure that the grounding and power cables connected to the routing node are securely in place and that there is no moisture accumulating near the routing node. To review grounding and site wiring requirements for the routing node, see “Prepare the Site” on page 49.

Regularly inspect the air filter on each power supply for dust and debris, and replace the filter element as needed. To replace a power supply filter element, follow this procedure (see Figure 54):

1. Grasp the filter cover on the power supply faceplate.
2. Pull the filter cover straight off the power supply.
3. Remove the filter element.
4. Install a new filter element.
5. Press the filter cover straight onto the power supply faceplate until all four sides click into place.

Figure 54: Replace the Power Supply Filter Cover



Replace a Power Supply

The routing node has two redundant, load-sharing DC power supplies. Each power supply is hot-insertable and hot-removable. When one power supply is powered down or removed, the other power supply automatically assumes the entire electrical load for the routing node.

To replace a power supply, use the following procedures:

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Install a Replacement Power Supply on page 152

Verify That the Power Supply Is Installed Correctly on page 154

Remove a Power Supply

The power supplies are located at the rear of the chassis below the SIBs. Each power supply weighs approximately 23.1 lb (10.5 kg).

Do not leave the power supply slot in the chassis empty for more than two minutes while the routing node is operational. The power supply must remain in the chassis to provide correct airflow.

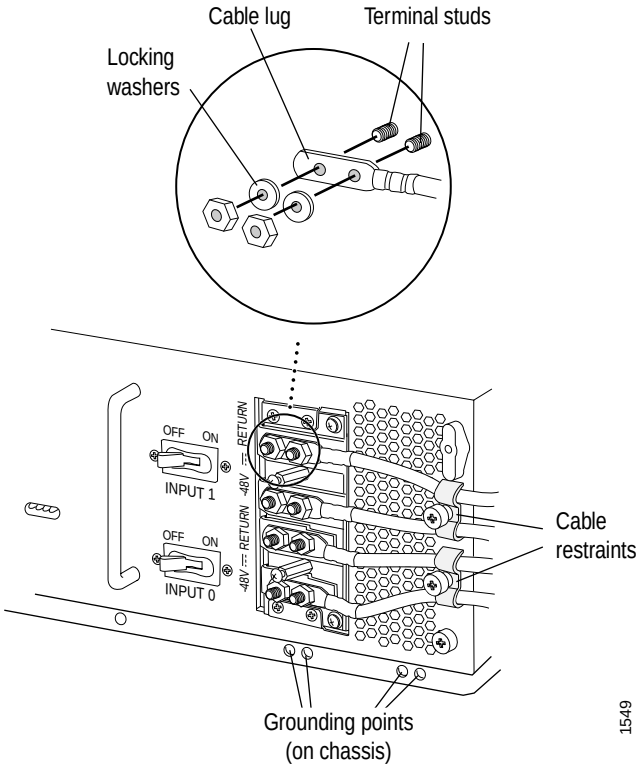
To remove a power supply, follow this procedure:

1. Make sure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cables might become active during the removal process.

There is no color code standard for the DC wiring. The color coding used by the site DC power source determines the color coding of the DC power cable leads to the power supply terminals. You must ensure that the proper polarity is connected to the power supply terminals. The power source DC cables might be marked with a (+) or a (–) label, indicating the cable polarity.

2. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
3. Turn both circuit breakers on the power supply faceplate OFF.
4. Loosen the nuts securing the clear cover over the power terminals, then remove the cover.
5. Remove the nuts and washers from the terminal studs (see Figure 55).

Figure 55: Disconnect Power Cables From the Power Supply



6. Remove the cable lugs from the terminal studs.

7. Unscrew the screw holding the cable restraint onto the edge of the faceplate, then remove the cable restraint.

8. Carefully move the power cables out of the way.

9. Loosen the captive screws on the lower corners of the power supply faceplate, then twist the ejector handles on the upper corners of the faceplate to unseat the power supply.

10. Grasp the handle on the power supply faceplate, pull firmly to start the power supply out of the chassis, and slide it halfway out of the chassis (see Figure 56).

Warning

Do not touch the power connectors on the back side of the power supply (see Figure 57). They could contain dangerous voltages.

11. Place one hand underneath the power supply to support it and slide it completely out of the chassis.

> **Caution**
>
> Each power supply weighs over 23 lb (10.5 kg). Be prepared to support the full weight of the power supply as you remove it from the routing node.

Figure 56: Remove a Power Supply

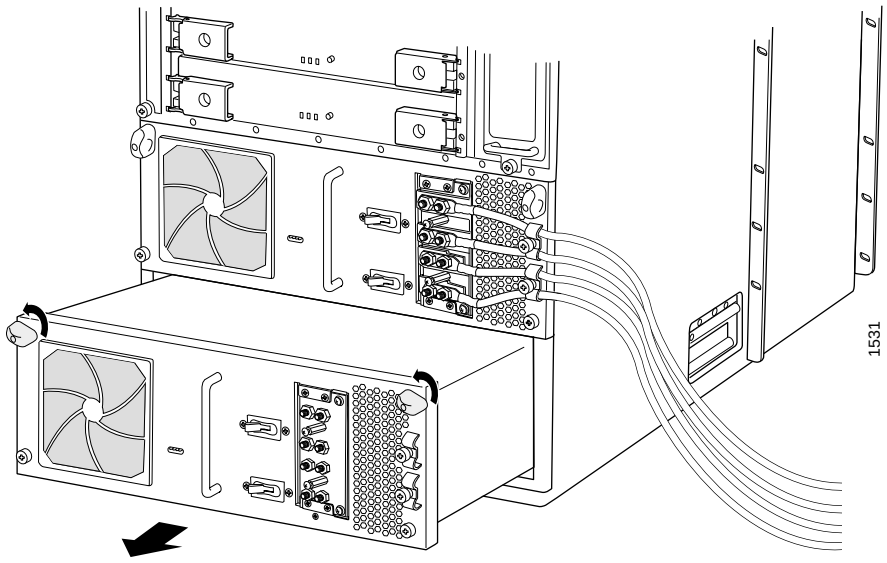
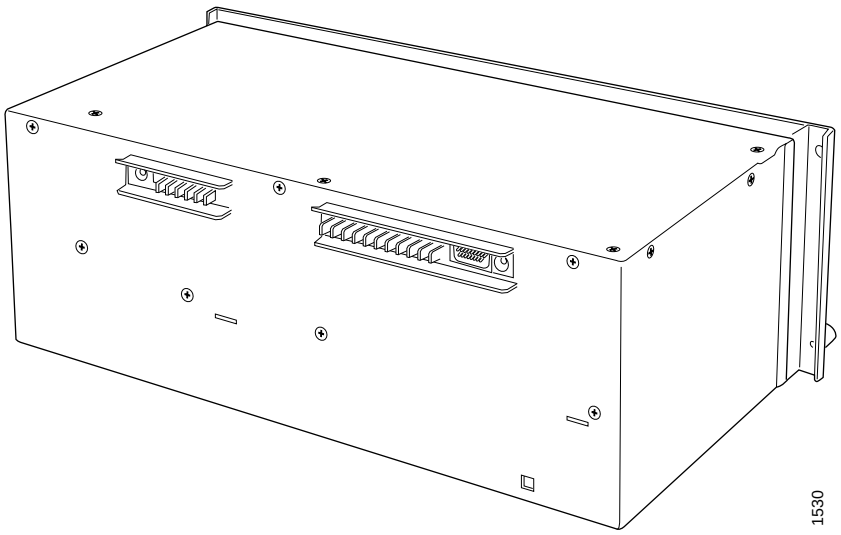


Figure 57: Rear of the Power Supply Showing Midplane Connectors



Install a Replacement Power Supply

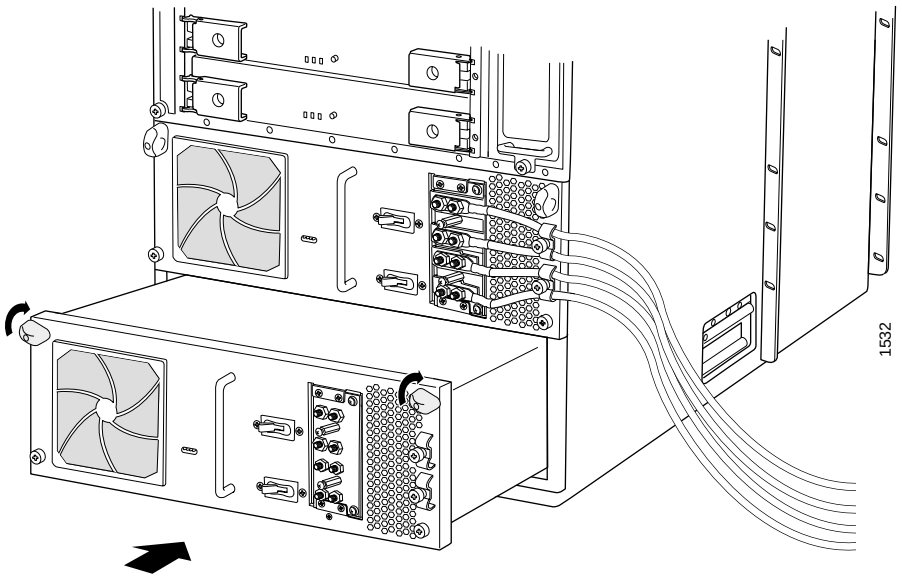
To install a replacement power supply, follow this procedure (see Figure 58):

1. Make sure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cables might become active during the removal process.

> **Caution** There is no color code standard for the DC wiring. The color coding used by the site DC power source determines the color coding of the DC power cable leads to the power supply terminals. You must ensure that the proper polarity is connected to the power supply terminals. The power source DC cables might be marked with a (+) or a (–) label, indicating the cable polarity.

2. Make sure that both circuit breakers on the replacement power supply are turned OFF.
3. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
4. Using both hands, slide the power supply into the chassis until you feel resistance.
5. Twist the ejector handles at the upper corners of the power supply faceplate clockwise.
6. Tighten the captive screws at the lower corners of the faceplate to secure the power supply in the chassis.

Figure 58: Install a Replacement Power Supply



7. Loosen the nuts securing the clear plastic cover over the power terminals, then remove the cover.

8. Remove the nuts and washers from the terminal studs.

9. Attach the lugs on the DC source power cables to the terminal studs, making sure the cables are not touching or in the way of any routing node components:

   Attach the positive (+) DC source power cable lug to the RTN (return) terminal.

   Attach the negative (–) DC source power cable lug to the –48V (input) terminal.

> **Caution**
>
> Each power supply must be connected to two dedicated DC power sources, one for each set of return and input terminals.

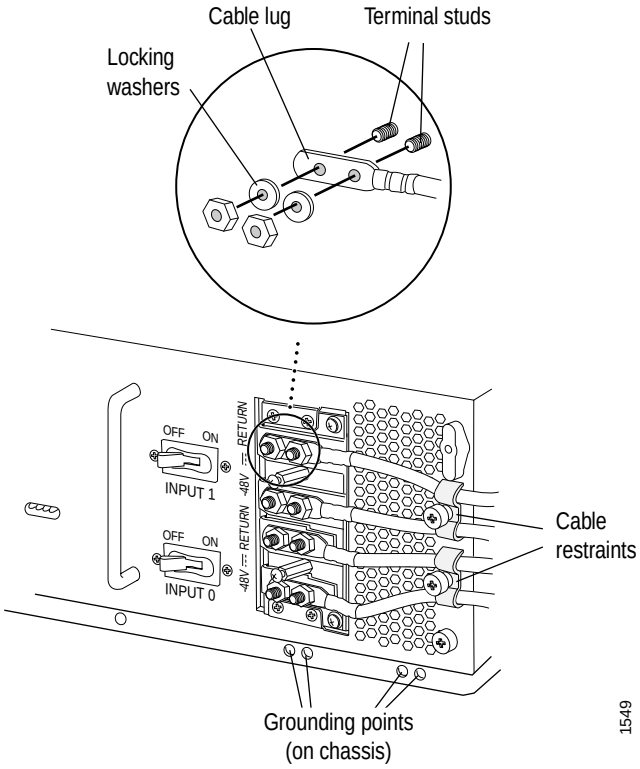
10. Secure the cable lugs to the terminal studs, first with the washers, then with the nuts (see Figure 59).

11. Verify that the DC source power cabling and grounding cabling are correct.

12. Replace the clear plastic cover on the power supply faceplate.

13. Collect the cables into a cable restraint, making sure the cables are not crossed or twisted, then screw the cable restraint screw into the power supply faceplate to attach the cable restraint to the power supply.

Figure 59: Connect Power Cables to the Power Supply



Verify That the Power Supply Is Installed Correctly

To verify that the power supply is installed correctly, turn both power switches ON. If the power supply is functioning normally, the CB ON LED lights steadily and the DC OK LED blinks momentarily, then lights steadily.